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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/654,568	09/03/2003	Hidefumi Yoshida	2803.68246	5834

7590 06/01/2006

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EXAMINER
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SCHECHTER, ANDREW M

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 06/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/654,568	<b>Applicant(s)</b> YOSHIDA ET AL.	
	<b>Examiner</b> Andrew Schechter	<b>Art Unit</b> 2871	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 March 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 16,17,29,58,65,66 and 68-71 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 58 is/are allowed.
- 6) ☒ Claim(s) 16,17,29,65,66,68,69 and 71 is/are rejected.
- 7) ☒ Claim(s) 70 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☒ Certified copies of the priority documents have been received in Application No. 09/454,578.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed 22 March 2006 have been fully considered but they are not persuasive.

The applicant argues [pp. 12-13] that *Oh* is not an IPS-LCD, implying it is non-analogous art to *Nishida*. This is not the case; *Oh* is an LCD with groups of parallel stripe electrodes just like *Nishida* and is clearly analogous art. The applicant argues that the transparent conductive metal layer 125 is not equivalent to the transparent electrode of the present application, because it “merely has a shielding capability”. This is not persuasive; if there are differences between *Oh*’s electrode and that of the present invention, they are not expressed in the present claim language.

### ***Claim Objections***

2. Claims 16 and 29 are objected to because of the following informalities:

Claims 16 and 29 have been amended to recite “electrodes are in parallel to each other along a surface of each of the substrates”. This wording is unnecessarily confusing, since the electrodes are only on one substrate, not on “each of the substrates”. The examiner understands the amended limitation to mean that the electrodes are in parallel to each other and they are in the same layer on the substrate, as shown in Fig. 32, for instance, rather than as shown in Fig. 33, which has them in different layers. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 29 and 71 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 29 has been amended to recite that the first and second groups of electrodes are in the same layer, and it also recites that an insulating layer formed to cover the electrodes is partially removed in the vicinity of at least one of the groups. The examiner does not see support for this combination of limitations in any of the figures or in the specification. Could the applicant indicate where in the specification support for this combination of limitations is found? Claim 71 depends from claim 29, and also recites part of the insulating layer being removed so as to expose the electrodes to liquid crystal; again, the examiner does not see where support for this combination of limitations is found in the specification or figures.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 71 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase "is exposed to the liquid crystal" is unclear. Does this mean the electrodes contact the liquid crystal (with no alignment layer or any other layer in between), or just that with the insulating layer gone, the electrodes are closer to the liquid crystal than they would be with the insulating layer in place? The term "exposed" does not appear to be used in the specification and the figures do not answer this question, since the alignment layers are explicitly omitted from them. For examining purposes, the latter interpretation is assumed.

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 16, 68, and 69 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Nishida et al.*, U.S. Patent No. 6,052,168 in view of *Hirakata et al.*, U.S. Patent No. 5,977,562, and further in view of *Oh et al.*, U.S. Patent No. 6,812,985.

*Nishida* discloses [see Figs. 4 and 5, for instance] a liquid crystal apparatus comprising a pair of substrates [10], a liquid crystal [7] between them, gate lines [4] and drain lines [6], a plurality of stripe electrodes [1, 2, and 20] disposed entirely within an

area bordered by the gate and drain lines, and a vertical alignment layer [11] formed on one of said substrates, said stripe electrodes including first [2] and second [1, 20] groups of stripe electrodes are in parallel to each other and alternately provided, being supplied with first and second voltages (different) respectively, a vertical alignment layer [11] on the other substrate, and an insulating layer [13 or 14] covering at least one of the first and second groups of stripe electrodes and arranged under the alignment layer formed on the one of said substrates.

*Nishida* does not disclose that the first and second groups of stripe electrodes are “along a surface of each of the substrates”, understood by the examiner to mean that they are in the same layer. Instead, *Nishida* discloses that they are on different layers separated by an insulating layer. *Hirakata* discloses an analogous device with first and second groups of stripe electrodes, and shows that they can be provided on the same layer [Figs. 7 and 8] or on different layers separated by an insulating layer [Figs. 9 and 10]. This is evidence that having the groups of stripe electrodes on the same layer (as recited) or on different layers separated by an insulating layer (as disclosed by *Nishida*) are art-recognized equivalents. It would have been obvious to one of ordinary skill in the art at the time of the invention to have them on the same layer in *Nishida*, motivated by the art-recognized equivalency of these two arrangements [see MPEP 2144.06].

*Nishida* does not disclose a transparent electrode having an entirely solid surface on the other substrate. *Oh* discloses [see Fig. 6, for instance], for an analogous device, a transparent electrode [125] having an entirely solid surface on the other substrate. It

would have been obvious to one of ordinary skill in the art at the time of the invention to have such an electrode in the device of *Nishida*, motivated by *Oh*'s teaching that it shields the device from electrostatic discharge from the hand of a user [col. 4, line 62 – col. 5, line 2]. Claim 16 is therefore unpatentable.

In the combined device, each of the stripe electrodes is opposed to the transparent electrode, with the alignment layer and liquid crystal therebetween, so claim 68 is also unpatentable. The liquid crystal in *Nishida* has positive anisotropy and is vertically aligned when no electric field is formed [see Title and Fig. 5, for instance], so claim 69 is also unpatentable.

9. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Nishida* in view of *Hirakata* and *Oh* as applied above, and further in view of *Ohe et al.*, U.S. Patent No. 5,600,464.

*Nishida* discloses an insulating layer [13 or 14] which is made of silicon nitride (SiN) and an alignment layer [11], but is silent on the material of the alignment layer and volume resistivities of both of these layers. *Ohe* discloses an analogous insulating layer made of SiN with a volume resistivity of  $3.0 \times 10^{14} \Omega\text{cm}$  and an alignment layer made of polyamide with a volume resistivity of  $1.0 \times 10^{14} \Omega\text{cm}$ . It would have been obvious to one of ordinary skill in the art at the time of the invention to use such materials with the disclosed resistivities for the layers in the device of *Nishida*, motivated by *Ohe*'s example and teaching that the LCD using these materials had no residual image (produced good quality displays). Claim 17 is therefore unpatentable.

10. Claims 65 and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Nishida, Hirakata, Oh, and Ohe* as applied above, and further in view of *Shin et al.*, U.S. Patent No. 6,271,903.

*Nishida* in view of *Oh* does not explicitly disclose that a voltage applied to the transparent electrode on the other substrate is the same as either the first or second voltage. *Shin*, for an analogous LCD, discloses that the voltage applied to the common lines and common electrodes [analogous to the second group of stripe electrodes in *Nishida*, receiving the second voltage] is the same as the voltage applied to an electrode on the opposite substrate [in *Shin's* case, a black matrix, in *Oh's* case, a transparent electrostatic shielding electrode] and is a ground voltage [col. 7, lines 47-54]. The examiner takes official notice that it is well-known to hold the common electrodes at ground, as evidenced by the example of *Shin*, and also that it is well-known that electrodes used as electrostatic shields are typically held at the ground potential in order to perform their shielding function. It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to have these electrodes in *Nishida* in view of *Oh* both be at the same (ground) voltage as is done in *Shin*, motivated by the desire to have the electrostatic shield work and take advantage of conventional (thereby being well-tested and understood, avoiding the need for experimentation and possible faults) driving voltage arrangements. Claims 65 and 66 are therefore unpatentable.



11. Claims 29 and 71 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Nishida*, *Hirakata*, *Oh*, and *Shin* as applied above to claim 65, and further in view of *Kim*, U.S. Patent No. 6,177,970.

*Nishida* in view of *Oh* in view of *Shin* discloses [as discussed above] an LCD with substrates, liquid crystal, stripe electrodes and a vertical alignment layer, two groups of stripe electrodes parallel with two different voltages, a transparent electrode having an entirely solid surface and a vertical alignment layer on the other substrate, the first group of stripe electrodes receiving an image data voltage and the second group of stripe electrodes and the transparent electrode receiving a common voltage [ground], such that alignment of the liquid crystal is changed according to an electric field between the stripe groups and between the first stripe group and the transparent electrode [it is inherent that there will be such an electric field and that it will affect the liquid crystal molecules at least slightly].

*Nishida* in view of *Oh* discloses an insulating layer [13] formed on the substrate under the alignment layer to cover the first and second groups of stripe electrodes, but does not disclose that the insulating layer is partially removed in the vicinity of at least one of the first and second groups of stripe electrodes.

*Kim* discloses [see Figs. 4-7, for instance] an analogous LCD in which an analogous insulating layer [80] is partially removed. *Kim* teaches that by removing such an insulating layer over the electrodes, the effective voltage applied to the liquid crystal molecules is higher than it would be with the insulating layer completely in place, and an after-image effect is reduced [col. 5, lines 20-25]. It would therefore have been obvious

to one of ordinary skill in the art at the time of the invention to partially remove the insulating layer [13] in *Nishida*, motivated by *Kim*'s teaching that this increases the effective voltage applied to the liquid crystal molecules and has a beneficial effect on the display. Claim 29 is therefore unpatentable.

As *Kim* teaches, a part of the insulating layer is removed in such a manner that one of the first and second groups of said electrodes is exposed to the liquid crystal [see discussion above under 35 USC 112], so claim 71 is also unpatentable.

### ***Allowable Subject Matter***

12. Claim 70 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. Claim 58 is allowed.

14. The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not disclose the liquid crystal display apparatus of claim 58, in particular the limitations that there are a plurality of stripe electrodes per pixel on one substrate, a transparent electrode covering substantially the whole surface of the other substrate, and an insulating layer covering the stripe electrodes, having openings above the stripe electrodes with tapered side walls. Claim 58 is therefore allowed.

The prior art does not disclose the device of claim 70, in particular the additional limitation that the volume resistivity of the alignment layer is not less than  $10^{10} \Omega\text{cm}$  and

not more than  $10^{12}$   $\Omega\text{cm}$ . Claim 70 would therefore be allowable if rewritten appropriately.

### ***Conclusion***

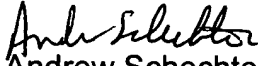
15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Schechter whose telephone number is (571) 272-2302. The examiner can normally be reached on Monday - Friday, 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Nelms can be reached at (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Andrew Schechter  
Primary Examiner  
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26 May 2006